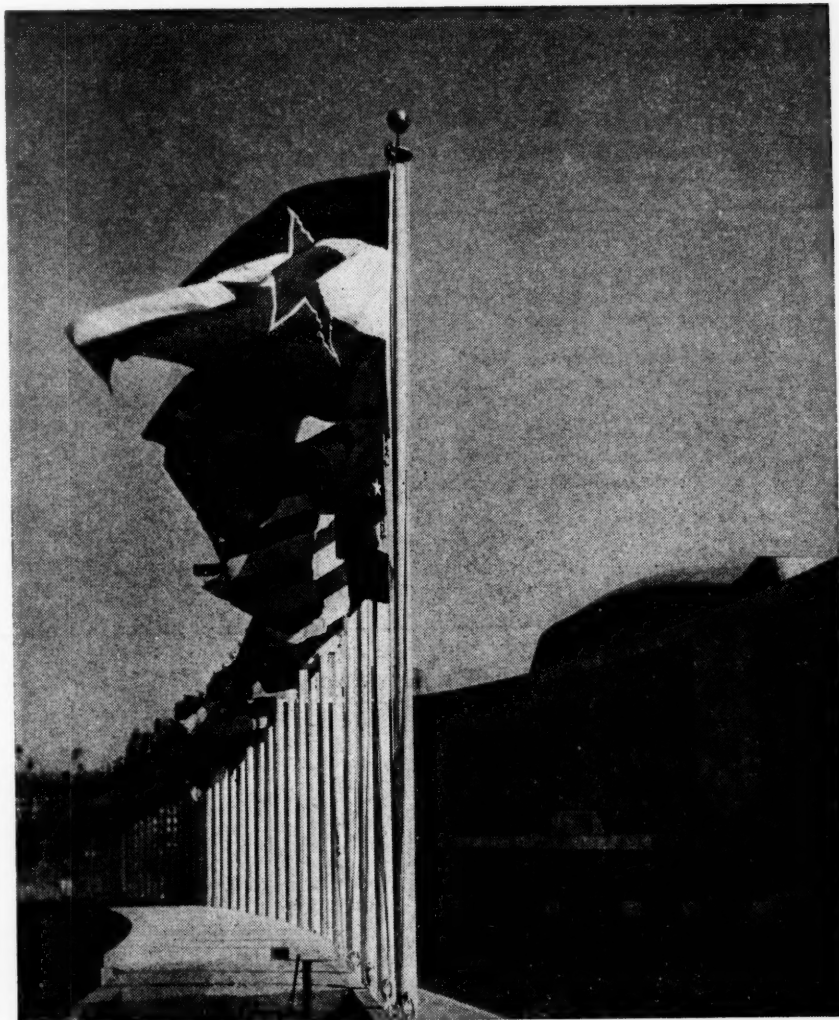


MAIN CURRENTS

IN MODERN THOUGHT



NOVEMBER, 1955

VOL. 12, NO. 2

BOSTON UNIVERSITY
COLLEGE OF LIBERAL ARTS

MAIN CURRENTS IN MODERN THOUGHT

A co-operative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.

VOLUME 12 NO. 2

NOVEMBER 1955

50 HILLDALE ROAD, PORT CHESTER, N. Y.

PUBLISHED 5 TIMES A YEAR IN SEPT., NOV., JAN., MARCH, AND MAY.

Editor: F. L. KUNZ

Associate Editor: E. B. SELLON

The Journal of the Foundation for Integrated Education, 246 East 46th St., New York 17, N. Y.



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APPLICATIONS OF GENERAL SYSTEM THEORY IN INTERNATIONAL RELATIONS

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A Suggested Method for Achieving Organic Unity

I

THE remarkable growth in the study of international relations during the past decade has led to unintended consequences.¹ While the purpose of the hundreds of students in the field has been to advance the state of knowledge about international relations, the result has often been an aggravation of problems. The great outpouring of new studies of dozens of particular subjects is not, in itself, a cause for complaint, nor is the attempt to explore international relations from less familiar vantage points such as psychiatry, linguistics, or communications. What is questionable is whether the more fundamental problems of the field have been yielding to an ever more exact and rigorous methodology and an expanding body of really relevant data.

Certainly, many more facts are known presently about a larger number of specific subjects than a few years ago, but how do the pieces fit together in a whole picture? In international relations, the crucial task of coordination has not yet received sufficient attention. The result is clear; the broad goals of inquiry are becoming obscured progressively.

Even the strong moralistic orientation in the inter-war period, to save the world from war through the strengthening of international law and organization, has lost much of its force. That approach provided a focus, if not an adequate conceptual framework. On the other hand, it should not be forgotten that international relations had become a very complex study before World War II, with increasing specialization and the elaboration of subfields within the broad divisions of international politics, international organization, area studies, international law, comparative politics, international economics, and diplomatic history. The situation has worsened to the point of

breakdown in communications between fields which, obviously, are closely related in reality. International politics and international economics provide an example of such isolationism.

These problems in the study of international relations have, of course, been recognized, and attempts to solve them have been made by various means — administrative, educational, and theoretical. Some notable efforts have been made to create satisfactory conceptual structures for an emerging discipline, especially the work of Hans J. Morgenthau in the advancement of international relations toward the status of a social science, and the publications of the Lasswell group which reflect an integrative effort on another level. These various attempts to develop theory and create system have already stimulated considerable cross-criticism.

Perhaps the pattern of the immediate future is coming into view. On one side is a growing number of scholars whose principal interests lie in system building. On the other side, the specialists whose main concern is to uncover bodies of specific fact will emerge, probably, as the chief critics of the systematizers. The resulting tension should provide an atmosphere favorable to great improvements in the study of international relations, so long as neither side acquires the commanding voice. In the stage of development we see emerging, the re-ordering and integrating of the field of international relations may have begun in earnest with the appearance of Quincy Wright's, *The Study of International Relations*.

II

THE following discussion takes advantage of Quincy Wright's comprehensive examination of the study of international relations. By virtue of the publication of this study and through particular reference to Part V of the book, entitled "Toward a Unified Discipline of International Relations," it becomes possible, within the length of a journal article, to introduce exploratory ideas relating to theory in inter-

¹The somewhat non-committal term "international relations" is used throughout this paper in reference to things-as-they-are, since the more organic term "world society," remains as yet a futurity.

national relations without the burden of having to supply a general context. No intention exists to offer a review or criticism of Wright's analysis, but rather to propose a consideration of the promising contribution of General System Theory as it may be applied to the problems of international relations.

A brief recapitulation of the major findings and contentions in *The Study of International Relations* will give a convenient setting for a discussion of the applications of General System Theory:

1. The scope of the study of international relations cannot be limited to the official political relations between sovereign states. International relations is a study concerned also with various other entities, organizations, forces, values, and relations which are international.²
2. Not less than eight "root" disciplines have constituted, historically, the study of international relations and not less than twelve others have also been contributory.³
3. These twenty areas of knowledge may be analyzed in several ways—for example, according to general function (practical, theoretical), mode of approach (art, history, philosophy, science), focus (people, society, state, government), method (descriptive, analytical, quantitative, etc.). A general discipline must encompass these aspects.⁴
4. The prime problem facing students of international relations, however, is not so much that of classification but rather, of integration, or to use Wright's term, of "reconciliation." Essentially, the problem is to create a general discipline of international relations by arriving at a satisfactory theoretical formulation.⁵
5. In pursuing a task of such proportions, Wright suggests that any adequate approach must possess the stature of a world view. He finds five such organizing concepts at hand for the purpose (concepts of plan, equilibrium, organization, spiritual community, and field). One—the concept of field—meets the requirements for an organizing idea but the others are not excluded. They are found to be containable within the field concept.⁶
6. Of the twenty contributing disciplines, several are discovered to have a special usefulness in theory building in the field context. Of these, two are said to be most fundamental—geography and the psychology of international relations.⁷
7. Wright develops the outline of a synthesis through a double conception of field (geogra-

phical, analytical). A program for re-ordering the study of international relations is, thus, implied. The geographical field accords with the ordinary concept of place. The analytical field is a dual abstract space occupied by the components of "capabilities" and "values." The two fields are presented, in combination, as complex topologies.⁸

Whether the models developed in *The Study of International Relations* can gain general acceptance is not a point at issue here. It may be said, however, that the general direction of the work has much in common with the integrative tendencies to be found, at present, in other sciences—physical, biological, behavioral, and social.

The systematizers of international relations, as they accept the proposition that a discipline of international relations must be synthetic and derived from other disciplines, are placed on shifting ground. The theoretical sources from which elements must be borrowed, such as theories of psychology, social action approaches, acculturation theory, information theory and game theories, as well as General System Theory itself, are incompletely formulated, tentative, and undergoing rapid change. This condition lends authority to the outlook that the study of international relations will continue to be a dynamic, tentative, disordered, and growing area of inquiry subject to substantial modification within a short span of time. Many students will, no doubt, be repelled by such a situation and will be content to direct their attentions toward "practical" projects. Those who persist in theoretical inquiry may find a measure of encouragement in a statement attributed to Kurt Lewin: "Nothing is so practical as a good theory."

III

GENERAL System Theory is not a new and sudden idea. Its founder, Ludwig von Bertalanffy, has been developing its principles for over twenty years. Applied first as an explanation in biology, General System Theory has proved its worth, as well, in certain aspects of modern physics and physical chemistry, and in ecological studies. Lately, it has begun to attract notice as a possible approach in the behavioral and social sciences. General System Theory (hereafter, GST) is, in a prime sense, a way of thinking having the proportions of a world view. A basic principle of its organismic conception, its "working attitude," is that of the "open system."⁹

The organismic conception in GST is a radical departure from the models of thought of classical physics. In particular, it is offered as an alternative to the mechanistic conception long prominent in

²Quincy Wright, *The Study of International Relations*, Appleton, Century, Crofts, N. Y. 1955, p. 6.

³*Ibid.*, pp. 32-60.

⁴*Ibid.*, pp. 125-129.

⁵*Ibid.*, p. 41.

⁶*Ibid.*, pp. 481-485.

⁷*Ibid.*, pp. 340-348, 409, 504-505.

⁸*Ibid.*, pp. 540-567.

⁹See MAIN CURRENTS IN MODERN THOUGHT, Vol. 11, No. 4, March, 1955, p. 77, for von Bertalanffy's own exposition of General System Theory, which is here pursued in application.

Western thought and implicit in the literature of international relations, in which the universe, the living being, the society, and the individual man are thought of in terms of the analogy of the machine and its constituting parts.

When we set out to explain international organization, for example, we usually proceed to describe formal structures composed of unit parts. These components are taken, in sum, to determine the character of the whole organization. We speak readily of the United Nations as generating forces or having forces exerted upon it. We compare the League of Nations and the United Nations by examining structures, the "operating instructions" of Covenant and Charter, and the performance records in much the same way we might compare the specifications, the parts, and the test reports of two automobile engines. An international organization is frequently evaluated according to whether or how well it is "working," and the solution to efficiency problems is thought to lie in administrative or structural changes.

In international politics, it is considered useful to reduce political realities to the terms of "power"—a metaphorical adaptation from physical science—and further, to reduce power to various "elements" such as population, geography, technology, etc. The interplay of power is often interpreted as either in balance or out of balance. The notion of equilibrium is not necessarily a static conception, but it is based on mechanistic assumptions.

Thinking according to the machine model has introduced both useful and misleading insights in the study of human affairs. Its chief shortcoming, however, is to be found in the sequence of operations required under its established methodology. Difficulties arise in the steps of isolating the constant elements in a social situation, of determining which elements are significant, and finally, of orienting such elements in true working relationships. In other words, structure and structural parts, on the one hand, and processes, on the other hand, are extremely hard to manage, as building-block units.

Bertalanffy accounts for such difficulties in a very simple way. The actions of living things do not fit the conceptual models of classical physics, and therefore, they resist explanation through the applications of the methodology of classical science. The working equipment of the older science is simply not the right equipment to use on the problems of knowledge in the biological and social sciences. In fact, it has been found unsatisfactory in explaining many aspects of modern chemistry and physics.

The closed system, for example is axiomatic in classical science. That which is under investigation is assumed to be separated from the outer environment, so that nothing new can enter or leave, and the outcome results from the initial conditions. The preoccupation is with the analysis of the characteristics and quantities of the elemental components, held in isolation for the purpose of study. The method

is summative, deducing the meaning of the whole from a knowledge of the character of its elementary parts. The goal of classical science has been to establish a set of laws, in the simplest possible terms, which will cover the widest possible range of phenomena. In practice, it has become "reductionism," i.e. the rejection of all scientific explanations except one for the particular given data, a principle which has been shaken only recently.

GST rests on other principles. Its organismic conception begins with the empirically verified fact that living beings and their organizations are not collections of isolable units, the sum of which accounts for a total phenomenon. All the phenomena of the living world show the characteristics of open systems in which the "components" are sets of organized actions which are maintained constantly by exchanges in the environment. Thus components in the form of open systems merge in the hierarchy of organization constantly enter and leave the general system in question.

From the microphysical level, at which the constituting parts of the atom are no longer regarded as corporeal units but rather as packets of transmutable energy, through atoms, molecules, genes, cells, tissues, organs, individuals, populations, to societies, the principle of the open system holds true. Any living system we choose to investigate is composed, according to the principle, of other organized complexes of open systems. What appears to us, at one level of inquiry, as a stable unit is, in another perspective, a complex changing system of lesser "units" in flow.

The postulates which refer to the dynamism of the open system are important to the social sciences. An open system, within the limits of its organization, tends to maintain itself, not in a state of fine equilibrium (for that implies a cessation in the flow of energy) but in a "steady state." The concept of the steady state constitutes an enlargement of the idea of equilibrium in politics and economics.

Postwar periods in modern international history, to give but a single example, show the tendency toward the establishment of orderly relations between governments, more or less according to the conditions created by the preceding war. An immediate re-balancing of political and military powers may be advanced by deliberate policy, but the total processes in the resumption of peace are too vast and complex to be determined by political decision-making. With or without direction from above, men will do what they can to eliminate disruptions and restore order, adapting old ways and ideas to meet novel circumstances. The process is, in fact, dynamic and unending. The steady state implies this inherent tendency to maintain the organization of systems which man shares with all organisms.

This innate order, whether social or organic, is augmented in certain instances by other resources,

such as auxiliary components which help maintain the steady state in response to changes in both "local" and "remote" environmental fields. Given the proper functioning of such auxiliaries, the system enjoys an improved chance of surviving change. The concept of homeostasis has been provided to explain such specific adaptive controls, of which one example is the organization that adjusts the human body to changes in external temperature. In the science of communications, a similar process has been called feedback. Both of these concepts have been usefully applied in international relations. However, although many aspects of policy and of diplomacy appear to conform in function to the idea of homeostasis or feedback, it must be emphasized that this is but one, and a rather special, attribute of the open system.

What Bertalanffy has called "equifinality" becomes possible through the approach of an open system toward a steady state. By abandoning the closed system assumption, we arrive at the generalization that final outcomes are not determined by initial conditions, but rather by conditions of outflow and inflow over a period of time. A final outcome in a sequence of development may be reached by many ways and from many types of beginning circumstances. Equifinality is an important organizing idea in the study of international relations. To date, too much weight and attention have been given to spectacular international events as causal factors. The quiet processes of growth, adjustment and adaptation within nations are the phenomena one must observe in studying trends. A traumatic historical experience or a particular form of social organization does not forecast what a people will be able to do a decade hence. The way the smallest puppy of a litter grows from his original condition into full adult size seems neither mysterious nor surprising, but the rapid rise of a nation commonly believed to have poor prospects (Japan in the twentieth century, for example) is sometimes profoundly misjudged. In general, the principle of the adaptive dynamism of open systems can prove useful in accounting for such facts.

The foregoing description has made it evident, perhaps, that the organismic conception of GST is a distinctive way of thinking. The reader, however, may have discovered that the ideas which have been presented are not unfamiliar. They have been circulating, in one form or another, in the intellectual atmosphere of the sciences for some time. Arthur F. Bentley's philosophy of transactionism, and the formulations of Lancelot Law Whyte in *The Next Development in Man* place similar emphasis on wholeness and the unity of process and organization, and against the "misplaced concreteness" of such categories as cause, force, structure, entity, event, element, etc. The correspondence of ideas, arrived at apparently quite independently by individuals isolated from one another, brings us to the last important aspect of GST—its methodology.

The viewpoint of GST might have little direct use-

fulness to the student of international relations if it contained no suggestion of how it can be brought to bear on problems of research and teaching. GST has, however, a strategy, a comparative methodology, which Bertalanffy calls "perspectivism."

Comparative inquiries must rest upon the assumption of some uniformity which lies behind the apparent welter of diversity and uniqueness in detail. The method of GST is to compare organizing concepts according to a master set of ideas all having to do with the general theory of system, thus creating an awareness of similarity or complementarity. When similar concepts arise from completely independent sources in widely separated fields of science, it must indicate one of two situations. Either some fashion of thought has been communicated through the scientific community, or glimpses of some underlying common reality have been caught in several different conceptual perspectives.

In GST, the second situation is assumed to exist. Bertalanffy has taken pains to show how the conceptual systems which have arisen in widely separated fields correspond to each other and to open system theory. These isomorphies are held to be significant, first, because they are conceived as a key to a new understanding of the real world, and second, because the exchanging of conceptual schemes among the various fields will advance the unity of science and augment scientific knowledge.

Unfortunate mistakes such as those made in constructing superficial analogies are guarded against by the avoidance of reductionism, by careful attention to isomorphies, and by cautious comparative procedures. Already, some attempts have been made at the Center for Advanced Study in the Behavioral Sciences at Stanford, California, to apply the principle and mathematics of relative growth of components of biological systems to the growth of specialization in human social systems. A vista has opened on a number of other promising research approaches in the social sciences through the applications of GST.

It may well be that international relations has reached a point of development where GST may be used effectively in that field.

IV

IT is well to recall, at this point, two important observations made by Quincy Wright. The first is the need to "reconcile" the various approaches in the study of international relations. The second is the requirement that any conceptual framework adequate for the field of international relations must have the dimensions of a world view.

The idea of perspectivism appears to be well suited for the coordinating task. If, instead of trying to reduce the scope of the field to a single preferred approach, the students of international relations will search through the various existing concepts for isomorphic indications, the result should be a refine-

ment of concepts already in use, and perhaps the formulation of new ones.

With reference to Wright's second point, it is suggested the open system as described by Bertalanffy be added as a sixth fundamental idea to the list of five organizing concepts in the study of international relations (plan, equilibrium, organization, spiritual community, and field).

As an illustration of perspectivism, an exercise will now be carried through, in order to show some possible isomorphic similarities in existing approaches in international politics. The results obtained may then be compared with the open system concept.

Currently, there are several approaches being employed in the analysis of international politics, namely, the power approach of Morgenthau, the communications approach of Karl Deutsch and others at the Massachusetts Institute of Technology, game theories and the decision-making approach of Richard Snyder and others at Princeton, and Wright's recently formulated capabilities-value-areas field approach. If we assume they are all constructs arising from the study of underlying realities, what similarity or identity can we see among them?

Let us consider first power theory and communication theory. The power theory, as noted previously, appears to be derived from the mechanistic analogy and the closed system. Its data, however, are historical, and the theory is meant to account for actions and events. The power of nations in interaction is considered to move between the limits of equilibrium and disequilibrium. The process of adjustment is conscious and deliberate through the skilled practice of diplomacy.

Communications theory as applied in international relations conforms to the action frame of reference. Gross action is mediated by the organizing, transmitting, receiving, and evaluating of information.¹⁰ A stimulus (a message) comes to a receptor, which then transmits its information to a control center of some kind where message evaluation and coordination take place. The result is sent on as an instruction to an effector where gross action occurs subsequently.

If we bring the two approaches of power and communications together in the context of international relations, we see that the adjustive acts of diplomacy and feedback correspond. When the power theory is applied consistently to the data of history, it organizes a large body of knowledge concerning the occurrence of events in international situations. It does not contain any systematic means to account for growth processes of the ends and purposes of action. This is seen clearly in the fact that Morgenthau is forced to accept obsolete and unsatisfactory psychological doctrines of drives and interests to explain the purposes of international political action.

¹⁰By gross action, I mean the activities involving physical displacements or the exertions which are called power in the exact sense. Talking and writing are examples of almost "powerless action," being different but not necessarily less important than gross action.

Communications theory escapes some of these limitations. Here the main attention is directed to the control center of the system. Analysis of messages, the study of intensities in the flow of information and of the components of the control system—in international politics, the elite—are research objectives.

Game theories enter, potentially, as a mathematical aid in the analysis of decision-making strategies. In generalized terms, a game theory is a method of working out relationships between an established point on a scale of values (i.e., preference, national interest, message evaluation-selection, decision) and probable outcomes of action in given circumstances. It may become possible in some rather distant future to provide a bridge between generalized goals of a foreign policy and the most economical means for acting to achieve these goals, through applications of game theory, but so far such applications have been of doubtful value. Game theories are, however, promising potential auxiliaries to communications theory inquiries.

Finally, Wright's topologies showing relationships between capabilities and values at different levels of organization and in various geographical locations pull together the conceptual components of the other formulations. As he believes, the field theory encompasses other approaches without necessarily invalidating them.

To sum up: 1. the concepts of power, effector action and capabilities are similar and appear as isomorphic; 2. power calculations in terms of national interest, information evaluation and selection, the decision, minimax or some other point on a scale of preferences, and value field show correspondence despite different emphasis.

The key symbol of the second category is "values." We see emerging from the comparisons the familiar dualism the field has encountered previously—action and values; power and morals.

IT remains to show the alignment of the open system concept with the others and its treatment of the dual categories.

Viewed in this perspective, power, action, and capabilities must be seen simply as functions in system organization. Here, a double situation prevails. The more highly elaborated the system and the more complex the transactions, the greater is the adjustive "power" of the system as it operates in its environment. Obviously, man, by virtue of his higher level of organization, has greater capacity to act than the earthworm. Equally apparent is the superiority in power of an industrial civilization over that of a simple village organization. It is this single dimension of power which has been most emphasized in international relations. But there is another side to the story.

GST brings in from biology the concept of progressive mechanization. A simple organism or a simple system is compensated for its limited power and efficiency by a large measure of flexibility in its adapta-

tion to change. Evolution toward higher forms of organization forces differentiation of functions among sub-systems. The result, whether in a human society or in an organism, is a kind of automation. Specialization and centralization increase. The completion of cycles of operations within prescribed spans of time becomes more crucial, since failure in timing or in accomplishment may cause the ruin of the system. The components comprising the system must become closely consolidated and more elaborate controls must be provided. While a complexly organized open system gains greatly in power and efficiency, it also becomes vulnerable to malfunctioning and damage.¹¹ With progressive enlargements of the system, there is a constant tendency toward rigidity in procedures and toward the limitation of the *range* of adaptability.

Open system thinking in international relations leads the inquiry away from a concern with the accumulations of power. Its emphasis is instead on adaptive action. The gains in power which have arisen in world politics and economics in the last half century have been offset by losses in adaptability and regulability. Elaborate controls are required to maintain the steady state in world-scale economic and political systems, but these sometimes have failed to prevent rapid dissolution. Wars and depressions of the twentieth century are a different order of phenomena, compared to those of the eighteenth century, because of this growth and transformation of social organization.

Further, what is good adaptive action for one set of components in a general system may be disastrous to others. It sometimes occurs, for example in the case of cancer, that a lower system (in this case, the cancerous cells) expands itself without regard for the higher organization of the body. Ordinarily, however, in an organism the system-as-a-whole will recklessly sacrifice lower systems (cells, tissues) if need be, in the effort to maintain itself. Comparable processes have been seen in operation at the social level in the recent world depression and world war. It becomes a task of the science of international relations to reshape such organizational generalizations into a specific explanation of historical situations.

This concept of organization upon which the open system approach focusses attention, is, however, quite different from that ordinarily used in studying international organization. Thinking of arrangements of parts according to a fixed and static pattern, which is then made subject to forces acting upon it, gives the wrong idea. System organization suggests something very different: *relationships* ordered in a hierarchy.

IN the terminology of GST, international organization is a response or an adaptive action whose purpose is the provision of specific control systems (homeostatic systems, in the biologist's sense) for the

¹¹The decentralists argue that much of the complexity of the modern society is unnecessary and exceedingly harmful to the individual man and the social health of the community.

maintenance of a steady state in a world system whose components are nations. The activities of international diplomacy, the world market organizations, the various international religious hierarchies, the world news-gathering enterprises, etc. are as much a part of the total international system as the United Nations or the North Atlantic Treaty Organization.

The unitary principle that organization is wholly dynamic suggests that the present division between the study of international politics and international organization is inconvenient and unnecessary. In the perspective of GST, we see but one area of inquiry at the supranational level: the study of the specific system organization of control. At the next lower level of organization—that of societies—there lies another and much larger field for systematic study in international relations.

Each of the several hundred existing social organizations, whether a tribe, a nation, or something between, may be considered an open system. As an open system, each is continually exchanging "materials" in its local environment and also with systems external to it. It is this latter fact which brings the subject into the purview of international relations. Each, we assume further, exhibits adaptive behavior, the range of which is set, presumably, by its organizational condition. Each of these social systems has its own unique characteristics (the anthropologist's "non-material" culture), but all will conform to the underlying character of living open systems. We thus acquire a theoretical foundation for controlled comparisons of social organizations which will be valid in terms of system organization, despite variations in phenomena. A branch of international relations can emerge which will be the study, by the comparative method, of the behavioral responses of societies. But how may such an approach be constructed?

Some societies have achieved a high degree of national integration while others have not. Progressive mechanization, in other words, has been going forward among the world's societies, but at varying rates, and these transitions have greatly modified their adaptive action.

At least two subfields of sociology and anthropology have initiated the kinds of studies which a comparative approach to international relations will require. The most successful attempt to conceptualize the pattern of social systems in transition has been the idea of a continuum between the polar extremes of a "folk" type and an "urban" type, or, to use the terminology developed by Howard Odum, the "folk culture" and the "state civilization." In a comparative international relations, we shall need to discover what transactional regularities appear at various points along the continuum.

There is also a subfield of anthropology devoted to the study of the effects of exchange and transaction between societies, called acculturation studies. Most of these investigations have been concerned with the responses to contacts between European state civiliza-

tions and primitive (sub-folk) cultures. While anthropologists have been primarily interested in the internal adjustments of the primitive societies, the student of international relations will find much that is valuable in the materials and methodology which have been developed.

In substance, a comparative approach brings an ordering principle to Quincy Wright's very interesting formulations of capabilities without which they are little more than a listing of numerous isolated elements and qualities. A study of relationships between systems in transition and at different levels of development may answer some interesting questions. In the early stages of transition from the folk organization, do emerging nations tend to alternate, uncertainly, between policies of political isolationism and expansionism? Is the nationalism of an emerging nation of a particular and temporary type? Is it invariably a negative nationalism directed against some real or imagined oppressor—a king, a colonial administration, or perhaps, a neighboring nation? Are transitions which occur very rapidly open invitations to political and social totalitarianism? Are the individuals who have been culturally uprooted in the passage toward the state civilization particularly susceptible to communist or other authoritarian appeals?

A comparative international relations may lead to the identification of recurring patterns of action which differ according to the positions of societies on the continuum.

There remains, now, the subject of values to be considered. Under open system theory, values are found only in the purposive action of a system and its components. In an organism, choices are made at all levels to resist entropy or system dissolution, and although the choices are not invariably perfect, the overall tendency is to maintain orderliness and organization. The aimless and random play of action sometimes imagined in the universe, according to mechanistic thought, is replaced in the organismic conception by order and purposeful behavior.

GST leads to the conclusion that both sets of concepts presently found in fundamental inquiries in international relations are references to a single reality. That is, power, gross action, capabilities, and adaptive action of components in systems constitute a single construct revealed in one perspective. Value is a concept gained from another vantage point. Both sets of ideas provide useful conceptualizations, nor is there any inherent conflict between the two to support the supposition of a "tragic" contradiction between power and morals.

In human society, the higher level of system organization of man creates a vast increase in the adaptive abilities of the individual person. The person is aware of himself, he tries to plan for a future, and he consciously chooses among possible courses of action on many occasions. Those steady generalized ideas about right actions which are ingrained in the individual are human values, and the most permanent of these, according to GST, are those which conform

to the conserving, preserving, and entropy-resisting characteristics of open systems.

Beyond the inferences that culturally transmitted directives to action—that is, social values—exist and are important at each level of system organization, and that value formulations must be arranged in a hierarchical order to fit the pattern of organizational transaction, GST has no other immediate theoretical insights to offer. Yet, it is worth noting that GST does not require a value-free approach in its applications in the social sciences. On the contrary, it implies a rather definite social philosophy, but that is a subject which must be taken up elsewhere.

V

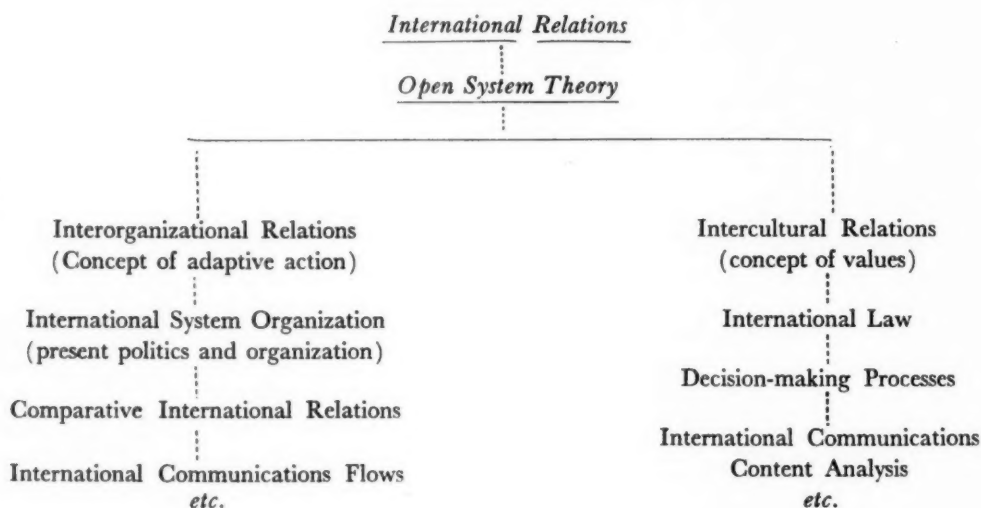
THE preceding exercise, it is hoped, has given a glimpse of a method by which concepts presently existing in international relations may be brought together in closer association. GST, it has been suggested, has the potential to coordinate the several approaches to the study of international relations. Its method of perspectivism encourages the selection and organization of data according to various conceptual schemes. It underwrites the piecemeal approach to knowledge and encourages the borrowing of concepts and methods developed in other types of inquiry, without yielding to a plan-less eclecticism. It requires that full recognition be given to the basic idea of system organization and system transaction.

The applications of GST to international relations made here are, admittedly, a first approximation. One of the major results is a fresh identification of international organization. This may be called a political or social field, according to personal preference, as these distinctions are arbitrary under the open system concept. Certainly, the time has come when it is unrealistic to confine the study of international relations mainly to official political relations between governments.

It has been argued frequently that the only vital relationships are those between states. It may be granted that nation-states are extremely important organizations, but the fact of greatest significance for the study of international relations lies in the volume, intensity, content, and quality of the exchanges which occur between these open systems. Nations are, indeed, large systems. But it is also true that nation-states are components in still larger systems called variously, the world society, the world market, the world community, etc. Further, the components below the level of the nation exchange and transact with the sub-systems of other nations. In the open system perspective, the question of which level of the system organization has greater importance declines in significance. Since every set of transactions conditions other sets, it becomes theoretically impossible to judge which is paramount. International relations should be investigated systematically at each level of relationships where transactions occur.

Since the matter of regrouping the materials of international relations in logical classes in the interest of better integration has become an important theoretical concern, an organizing plan is outlined here, according to General System Theory. In the applications noted

above, two sets of isomorphically related concepts made their appearance, the concept of adaptive action, and the other, values. An integrated theoretical discipline may be elaborated, with appropriate subfields, from these two general concepts:



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TOWARD THE KNOWLEDGE OF MAN

Ordway Tead

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An Unorthodox Approach
To College Studies

NOTHING less than all we think, feel, wonder about and aspire to is the continuing concern of curious man. But the problem of how a growing knowledge of man in his total world is to be transmitted from one generation to the next is perennial. Indeed, with the increasing range of human awareness, the problem becomes constantly more staggering. The difficulty which this poses for higher education is progressively greater.

My essential theme and the problem which this discussion sets forth is well suggested in the following sentences from Karl Jaspers. In his book *Way to Wisdom* he says, "Our study of man has brought us many kinds of knowledge but not the knowledge of man as a whole." And again, "Man is fundamentally more than he can know about himself."

The difficulty of the problem he further states thus: "The study of man is of supreme interest, and if pursued in a spirit of scientific criticism, rewarding. If this is done, we know methodically what and how and within what limits we know a thing and how little we know, in terms of what is possible, and how radically inaccessible to this knowledge authentic humanity remains. And we avert the danger of obscuring man by pseudo-knowledge of him."

If the question is posed—do we not already in higher education attempt to study "life"?—it seems to me that the answer has to be "no." What to study and how to study it remain essentially unresolved. We know the views of those who have historically made attempts in this direction. If we momentarily exclude the physical sciences, I may remind you of the insights of a Darwin, Calvin, Marx, Freud, Watson, and others. But all these names are reminders of partial insights, of fragmentary views, of attempts to have certain oversimplified outlooks on human reality explain the totality.

It is admittedly not practical to study in the college offerings of today's experience in the raw or the ongoing process of life itself. We are in some sense forced to falsify that which we are striving to teach by having recourse to subjects which by definition are selected disclosures through delimited angles of vision. It has become a platitude to say that by some as yet undefined process each person has to integrate

the subjects he studies to arrive at his own knowledge of a more inclusive reality. Yet the question remains as to whether the formal study of subjects cannot itself be pursued in such ways as to achieve a closer approximation of wholeness in the resulting view of man.

My effort here will be to say something about (1) the assumptions necessarily underlying all college study; (2) the aims of courses as conventionally viewed; (3) some current concepts which are contributions to a basis for understanding man in our society; (4) a few such concepts analyzed as examples of the need for viewing ideas with their opposites in order to attain fuller truth; and (5) finally, to examine how it may be possible for what is essentially a religious view to suggest a deepened approach to a study of man's wholeness. It may thus come about that we can start toward a knowledge of the human situation which can at once illuminate and to some degree unify all that college offers to be studied.

I make no apology for posing the educational task in less than orthodox terms. And I am painfully aware of my own inadequacy in an attempt to do something which I am nevertheless sure is worth attempting. This has to be a personal statement with a minimum of documentation proffered, but with the hope that the listening ear will recognize that I have drawn on wide resources — all looking toward an orientation which may hopefully help teachers and others to see the world more coherently above and beyond the courses which colleges now typically offer.

I

ANY study by the human mind of its potential knowledge of man, or of anything else, would seem to require the assumption that beyond the obvious "great blooming, buzzing confusion" there is some degree of uniformity, constancy, regularity, lawfulness, orderliness, continuity of process, some sense of direction or purpose, some emergence, all discoverable in and through the progressive confronting of raw experience. One has to start somewhere, and if this broad assumption can be momentarily accepted it may be possible to come full circle and gain for it a deeper meaning by way of conclusion. Such an assumption of the underlying actuality of an orderliness

in nature, ultimately expressible in laws or principles, enables one to say something about the ways in which the various processes in the world operate both as description and as standards to be adhered to.

Professor John Wild suggests this idea of natural law as purposive when he characterizes it as a "rational determination, founded on nature, of the end which perfects man and the necessary means to this end."¹ The notion of natural law is not new.² But as historically used, it has suggested a too static view, a largely descriptive disclosure. The concept of God, as law-giver and judge, is a familiar idea; but it had to do originally with supernatural revelation from "on high," and did not partake of the richness and comprehensiveness of the concept of a pervasive natural order in which the organic processes of abounding energy and dynamic life continuously interact, evolve, and purposively emerge.

My hypothesis here is, then, that manifestations of the working of natural law as an emergent and formative principle pervade the world immanently;³ that such orderly processes are infused — mysteriously — with a transcendent or supra-human (*not* super-human) significance; that the attribute of lawfulness, progressively discoverable, is *intrinsic* to our effort to grasp an All-Encompassing Reality. The effort at progressive discovery is both intuitive and intellectual; it is relative in its outcomes and continuing in its absolute compulsion upon the mind and spirit within a naturalistic frame. This inner compulsion looks to attaining "the end which perfects man," as Wild says, through sustained concern for "the necessary means to this end."

II

I come now as a second topic to a brief examination of the aims of college courses as conventionally offered. Subjects now studied are for administrative reasons often grouped under three heads: the natural sciences, physical and biological, the social studies, and the humanities. All these are fragmented efforts to say something in one of several frames of reference about certain aspects of actual experience, including some presuppositions about natural order and law.

We are fond of saying that scientific outlooks, methods and results should teach us to understand, to control, to command, to predict. Scientific methods are designed to make use of various corroborative checks and tests. It is recognized today that there is no *one* scientific method. The usable method is dictated by the nature of the problem. To be able to ask the right questions, and to pose the confronted

problem clearly with the appropriate method is one of the major strategies in science.

Scientific efforts and approaches are themselves in the realm of moral value. In human drive and experience it is valuable to wonder, to be curious, to question, to seek answers—and about *all* phenomena. The passion to inquire is a passion to understand. There is no permanent separation between the dedicated valuing of scientific effort and result which the scientist enjoys and the similar satisfaction of a creative artist. And there is the valuing of the corroborations and applications of scientific findings which are made by others, just as the beholder values an artist's results. It is impossible for scientific activity to be, as some claim, outside any concern for values. Where there is purposeful activity, there *is* value; for this is an effort toward some human satisfaction.

The real confusions here lie elsewhere from an educational standpoint. What does it imply when we say that all phenomena are properly subject matter for scientific inquiry? And is the assumption of mechanism with the implied inevitability and universality of deterministic cause and effect the only possible scientific assumption?

As to the first question, the answer is now reasonably familiar. Not only do we encourage every possible pursuit of factual knowledge but we try, not too successfully, to imbue every student with the desire and the rational methods to further his own problem solving in all areas of living in this scientific spirit. The use of inductive, deductive, and intuitive attacks is encouraged, and the kinds of problem solving in which these different methods are appropriate are analyzed.

In respect to the second question, however, the really profound confusions become obvious. The issue is well stated by Whitehead as follows:

"A scientific realism, based on mechanics, is conjoined with an unwavering belief in the world of men and of the higher animals as being composed of self-determining organisms. This radical inconsistency at the basis of modern thought accounts for much that is half-hearted and wavering in our civilization . . . It enfeebles it [thought] by reason of the inconsistency lurking in the background . . . The only way of mitigating mechanism is by the discovery that it is not mechanism . . . [my] doctrine involves the abandonment of the traditional scientific materialism, and the substitution of an alternative doctrine of organism . . . the theory of *organic mechanism*."⁴

And later he offers the illuminating sentence:

"The general aspect of nature is that of evolutionary expansiveness." (p. 136)

I do not pretend to the competence to affirm the truth of Whitehead's metaphysics on this score, although I personally accept it to the best of my understanding. But the fact that matters labelled "science"

¹See Wild, John, *Introduction to Realistic Philosophy*, Harpers, 1948, p. 47.

²See Whitehead, A. N., *Adventures in Ideas*, Macmillan, 1933, Chapter VII.

³The sources of this knowledge include importantly the exact sciences with their disclosures deriving from deductive or postulational formulations and findings.

⁴See *Science and the Modern World*, Chapter V, p. 110, The Macmillan Company, 1926.

are taught in one frame of reference and those labelled "humanities" in an opposite frame presents an issue which calls for honest acknowledgment among college teachers. The answer could conceivably lie not in saying that different kinds of subject matter have necessarily to be explored with disparate premises, but rather that all experience is to be approached and conceived as partaking in evolutionary processes which are the observable characteristics of organisms.⁵

The historic "warfare" of science and religion has its critical tension at this point. And surely any scientific principle of "indeterminacy" does not throw cause and effect out the window and give place to some unlimited "freedom" in a way that certain religious protagonists have ventured to assert and derive comfort from. Resolutions of this confusion lie not in concessions on either side as to the avenues down which truth is to be found, but rather in some newer synthesis in which fact and value are viewed as two aspects of ongoing organic, evolutionary processes.

Indeed, the sense of an order of nature and a lawfulness to be discovered in it extend throughout the activities of so-called human nature as part of a unified world in which the intrinsic processes of becoming are themselves incorporated into the concept of natural law as dynamically conceived. In Whiteheadian terms, the scientist and the religionist can both have reverence for the same insights and the same unresolved mysteries.

III

THE social studies, or "social sciences," are in turn frequently pursued as if assumptions of mechanical causation both could and should be taken over from the natural sciences, and used as the basis of inquiry into the several areas which may some day yield a "science of man." At present, of course, the field is fragmented in a confusing way. One has only to enumerate these areas to realize that inevitably in the analysis, man himself in his wholeness is all too readily lost to sight. For we are asked in college to study anthropology, biology, economics, human geography, history in its descriptive phases, physiology, psychology, religion as descriptively viewed, sociology, and various subdivisions or hyphenizations of these.

Knowledge of aspects of the nature of man is admittedly being augmented by this specialization. But do the current scientific premises lead to truly wise or adequate findings? Many social scientists appear

⁵This is much more profoundly stated by Whitehead in the same reference as follows:

"Nature exhibits itself as exemplifying a philosophy of the evolution of organisms subject to determinate conditions. Examples of such conditions are the dimensions of space, the laws of nature, the determinate enduring entities, such as atoms and electrons, which exemplify these laws. But the very nature of these entities, the very nature of their spatiality and temporality, should exhibit the arbitrariness of these conditions as the outcome of a wider evolution beyond nature itself, and within which nature is but a limited mode." (p. 135)

to believe that their conclusions have some unassailable validity because they have been arrived at in a spirit of disinterested "objectivity." Observation, description, classification, generalization — inductions from evidence which has itself been selected to conform to the premises of a pre-conceived scientific method—these are too often deemed to be avenues to "truth" even though imponderable influences are excluded. *What* truth, applicable under *what* circumstances, characterizing how much of total experience, having what meaning beyond itself, related to what larger frame of reference about the whole nature of man—these questions are less frequently considered. The result has been that the "scholarly" pursuit of the several social studies becomes fragmented, partial, distortive of any wholeness of view about human nature, and devoid of any suggestion of judgment about the value significance of that being studied. Illumination about the good man in the good society is rarely forthcoming or even recognized as desirable.

As the proponent of an opposite view, I shall maintain that it is virtually impossible to pursue the social studies apart from some frame of reference in which value judgments are operative. No matter what the human phenomenon under observation, I maintain that it is not only impossible but useless to pursue its study apart from some set of values which has interpretative significance. This is true of a toothache, of delinquency, of sexual intercourse, of imperialism, of national sovereignty, of the gold standard, and all the rest. Study of these *in vacuo* is fatuous, unrealistic and sterile.

If man is a value-seeking, value-cherishing and value-realizing organism, *which he uniquely is*, the study of the multifarious ranges of his experiences is a discovery of degrees of valuing and of the relative worthfulness of the different ranges of experience. Premises that may be helpful in studying rats in a maze are inoperative for humans in their various societies. For in human affairs the "is" and the "ought" are virtually inseparable if the science of man is rightly viewed as understanding our nature in its wholesomeness, its potentiality, and its creativity. Human judgments upon experience are value judgments; they are (whether explicitly acknowledged or not) concerned with the better or the worse, the good or the bad.

The idea that one purpose of social study is gradually to arrive at some awareness in the study of man of common denominators, of characteristic needs, desires and satisfactions universal to the human species, must be further extended among college teachers. Such formulations will include the evaluation of all modifying and conditioning factors (gradually becoming more measurable) of inheritance, physique, climate, social nurture and the other differentiating influences. Never before, I am confident, has our study and thought about the nature of man been more penetrating and more rewarding of fresh insights than in the current decade. Illustratively, I

mention below a few of the scholars who are contributing to this new consensus of view. These and others have it in common that they are striving to delineate a normative (value-defining) picture of human healthfulness, wholesomeness, normality, self-actualization—a picture more accurate than is discoverable in current college texts where the pathological is stressed or where a kind of dessicated objectivity analyzes traits or processes but never whole persons in action.

IV

AS to the illumination to be offered regarding our knowledge from a study of the humanities, I believe that we are here at the beginning of a genuine renaissance. The evidence of fresh insight and a fresh vigor in the world of the teachers of the humanities becomes cumulative and betokens awareness that in these studies, properly pursued, man has revealed himself to himself in most penetrating ways. If the arts can convey human truths and value affirmations in ways which transcend purely rational discourse, then we may truly affirm that the insights and formulations of artists, philosophers, prophets, saints and saviors proffer for the aspiration of all who will listen diverse aspects of visions of human greatness and intimations of the divine, vouchsafed in no other way. These are intrinsically appealing to attributes in our nature which are ineradicable, which are uniquely human, and which in some inexplicably qualitative way link us to a Reality beyond ourselves.

We have had plenty of study in the humanities which has *not* caught this vision and has not conveyed the phosphorescence of inspiration and self-transcendence. But it is now clear that every teacher of the humanities who is, in his own degree, caught up into awareness of the spiritual heights which the great artists have always enunciated or suggested, can make of his teaching an evocation of excitement about the spiritual, and a dedication to the visions caught, which is in essence what education at its best is trying to do, and which contributes in an ennobling way to the knowledge of the nature and spirit of man.

The sublimities of the artist's vision anticipate and render lovely those aspects of reality which more soberly and patiently may afterwards be given some documentation in the discoveries of natural science and in the search for scientific truth about human relations. The sublime orderliness of which the great artist is intuitively an interpreter is reinforced by the sense of orderliness and lawfulness which underlie the discoveries of natural scientists and of the students of society.

So much, then, is by way of suggestion about the meaning of and approaches to the subject-matter ex-

posures of the college. My effort has been to make somewhat explicit the unifying elements in thought about the human career that can rightfully help teacher and student to more coherent efforts at analysis and synthesis.

V

THERE are, further, great concepts about the relation of man to life so integral to an understanding of our present situation that study of them *as such* should illuminate our knowledge of man's nature. These concepts are not all of the same level of significance; yet they are all of the warp and woof of our understanding and interpretation of the context of contemporary living. A considerable body of supporting meaning is now being read into these concepts by discerning scholars, and in respect to this deeper meaning, it is the task of the teacher to encourage learning experience for the student that goes beyond the verbal and the intellectual, into the realm of participative experience and convinced, operational validity.

I am thinking, as examples, of such concepts as democracy, culture, science, freedom, selfhood, leadership, race, communication, love.

It is not in point to elaborate here the kinds of intellectual content, experience or activity for which these words have become the symbol. Enough to suggest that they are all concepts centering around and operative in relation to the institutional settings in which western man now finds himself. They are reminders of numerous institutional tensions to which he must accommodate himself, which he seeks to control, and in overcoming which he has to discover ways toward deeper individual realization. Moreover, they are concepts susceptible of rigorous examination by methods historical, psychological, and philosophic; and if searchingly examined, they require of the student valuable exercise in the integration of varied areas of "academic" knowledge.

A reference is also in order to another group of words and concepts which are today carrying a new and substantial weight of meaning on the *individual* side. Qualitative knowledge of man's nature makes increasing allusion to such concepts as: growth, maturity, self-acceptance, spontaneity, the realizing of potentiality, self-fulfillment, self-actualization, creativity, self-transcendence. All these ideas as now employed direct attention to the richer functioning of the individual as he makes the contribution of his selfhood at its most productive in interdependence and reciprocity with the creative life activity of others.

What the social studies should be trying to say today about our knowledge of man is that selfhood is fulfilled, that potentialities are realizable, that fellowship can become a fact, where a combination of identifiable conditions are being forwarded.

The social processes contributory here include the following: democratic sentiments and methods as the milieu for organized associations, governmental and

⁶In alphabetical order the following is a representative sampling enumeration of scholars who deserve wider study in one or another social studies course: Lawrence E. Cole, Izette de Forest, Erich Fromm, A. H. Maslow, M. F. Ashley Montagu, Gardner Murphy, Carl Rogers, Edmund W. Sinnott, Pitirim Sorokin, and Launcelot L. Whyte.

voluntary; science as the tool for increasing material understanding and mastery; a limited freedom as a condition of growth and self-responsibility; a discerning leadership as the guide and channel to potential cooperative pursuits; a national or racial consciousness kept in restraint by a global community reference; a use of communication, personal and group, which is realized to be a two-way shared experience toward common understanding; a sentiment of informed love animating and permeating all of the above occasions or relations or efforts; a concern for cultural depth which at once restrains and releases aesthetic sensitivities. These social processes, implicit in civilized living, can be made more coherent, meaningful and contributory, insofar as their

conceptual statement can as a result of interpretative education supply guidance toward concrete procedures and personal satisfactions.

But for education to help to such ends the guidance has been imparted with passion by teachers and embraced with dedication by students.

This entire approach to college subject-matter will necessarily involve a confronting beyond concept of the raw experience of actual social living. The skilled teacher has to show the interweaving of idea and of life; and in the process it will be unavoidable that the effort of the classroom will be *interdisciplinary*. This will be good, for the student is entitled to get the sense occasionally that "this which I here and now confront is life indeed."

(To be concluded)

INTEGRATION IN COLLEGE CURRICULA:

Amherst and Michigan State

TWO recent books describe the efforts and procedures which two colleges have gone through in recent years to modernize their curricular offerings and to achieve a degree of integration. These are: *The Basic College of Michigan State*, edited by Thomas Hamilton and Edward Black (The Michigan State College Press, East Lansing, 127 pp., \$2.75) and *Education At Amherst*, edited by Gail Kennedy (Harper and Brothers, N. Y., 330 pp., appendices, \$4.00).

It is significant that the first volume should, on its second page, relate the Michigan program and the entire general education movement to Amherst in these words: "... If it is necessary to name a point at which the contemporary reemphasis [of the general education movement] started, Alexander Meiklejohn's inaugural address at Amherst in 1912 is as logical a date as any." It would seem from reading the Amherst volume that Dr. Meiklejohn was really following a long tradition, for reference is made to curricular studies and suggested reforms made at this college as early as 1826. In so dating the beginnings of the conflict, the Amherst volume quite pertinently traces a historical parallel between a "Jeffersonian" philosophy of liberal education for a democratic elite and what it terms a "Jacksonian demand for a system of education, universal and public, but primarily vocational and utilitarian."

It is significant that, although the Committee on Long Range Policy at Amherst was organized in October 1941, the faculty committees in both these institutions actually got to work on the problems of their

respective institutions in March 1944. The result at Michigan State was the organization of the Basic College in July of that year. At Amherst the deliberations of the committee resulted in "The New Program" of studies to which the major portion of the book is devoted.

Since the problems attacked on these two campuses exist on every campus, and since both committees operated within the framework of their existing institutional commitments, the results are quite parallel programs for general education.

The problems of college education in this country are summed up in these two examples, as follows: *Amherst*: "In the abolition of required courses in the first two years, enlargement of the offerings for freshmen, and reliance on a group distribution requirement to take care of the students' general education, while strengthening the requirements for the major and making greater provision for honors work, in order better to insure some proficiency in one field at least—in all these respects Amherst was responding, as were nearly all colleges of her type, in the easiest and most obvious fashion to the increasing demands made by the more recent subjects for parity in the curriculum." *Michigan State*: "In general the faculty was ready for and receptive to a proposal for some sort of program required of all students. The widespread discussion of too-early and too-intensive specialization in higher education which had been in progress throughout the nation since the thirties was not without effect."

Both colleges revised the freshman and sophomore years of curricular requirements for all students. "As

expressed by a group of the faculty to the [Amherst] Curriculum Committee . . . (1) Freshman and sophomore years are the period when students should range widely and should be brought into contact with all of the broad fields of knowledge included in our curriculum. (2) Choice is not free when the range of choice is unexplored and unknown. It is the function of the liberal arts college to require at least intelligent consideration of a few of the fields of knowledge which the college, by the fact of its teaching them, has marked as significant."

"Basic education, as proposed for Michigan State College, is designed to provide students with a sound foundation on which to build an intelligent interest in personal, family, vocational, social and civic problems, a better understanding of these problems, and a greater ability to cope with them. It includes a study of man's relationship to physical, biological, and social sciences, an increased knowledge of the historical background of present day civilizations, and an enhanced appreciation of cultures, past and present, that have been expressed in literature, music and art.

"Students whose training may eventually become highly specialized need this foundation of general education experience that each may have a greater appreciation of the relationship of his special field to the needs of society as a whole."

Amherst broadened the offerings in the freshman year by allowing students to elect courses in any subject except Economics, Dramatic Arts, Italian, Spanish, Psychology, Philosophy and Religion. These courses remained sophomore electives. Three new courses, Anthropology, Classical Civilization, and Problems in American Democracy, were introduced into the freshman year as further enrichment. In addition, the course of study was divided into three broad groups: Mathematics and Natural Science; Social Studies and Philosophy, and Language, Literature, and the Arts.

Comment regarding the mathematics and science group of courses indicates that, at Amherst, the same difficulty was encountered as in other institutions. While the committee was able to establish several excellently integrative criteria for content and method, there is evidence that efforts to integrate were confined to interdisciplinary relationships as to subject matter and method.

Michigan State also seems to have encountered difficulty with its survey courses, of which there were at first seven to be chosen by election. Of this it is said that "If the institution was trying to develop comprehensive courses which provided educational outcomes desirable for all students, then it was inconsistent to permit the student to elect not to participate in some of these courses. Investigation revealed, too, that the students were developing patterns as to what they would omit. Only about one-fourth of them were taking courses in physical science, for example, and many of these were enrolled only because the department in which they were majoring required it." As a consequence, changes were made

in the basic program in 1952 which included: "The development of four integrated courses in general education to be required of all students: Communication Skills, Natural Sciences, Social Science, and Humanities . . ."

Once again, a telling remark appears in the Michigan State report: ". . . To most scientists and teachers of science, natural science does not exist as an entity . . . Each individual scientist was trained in a particular field of science and became, not a natural scientist, but a physicist, chemist, zoologist or botanist. Thus, for a course in natural science to be developed, the historical trend of separation among the various sciences must be reversed, and some sort of synthesis must be made which will establish natural science as a unified and integrated discipline.

"Such a unification, however, will not come through the medium of the theoretical concepts which make up the various sciences . . . It is essential to find some unifying concept that will serve as the integrative theme . . . Science also includes an *intellectual process* . . . universal in all scientific activity. . . This common characteristic, which identifies scientific activity of all types, can become the integrating theme of a course in natural science.

"It is this theme which has given us our major objective: to give the student an understanding of science as a particular adaptation of intellectual behavior."

Space does not permit further detailed review of these two reports. They are valuable as studies in curriculum and methodology, adapting two quite diverse institutions to the needs of our day. Evidence is to be found in both that the shortcomings of these two programs arise from the academic tradition itself, and from the very things which the programs set out to remedy: departmentalization, specialization and professionalism.

Michigan State has come close to a sound basis for integration (science as an intellectual process), rejecting, however, the final step, conceptual unification of all science, insofar as theory takes us. Their report points out that they attempt to make their students also aware of science as a social phenomenon which is closely related to other aspects of society and that ". . . the knowledge gained by scientists has affected our philosophical understanding of the nature of life and of the universe, and this in turn has affected the behavior of individual men and nations." Since they have come this far toward integration, one wishes that they could or would take the next logical step toward a study of concepts in *all* four of their basic courses; that they would explore the nature of science as an intellectual activity in its relation to philosophy and art; that they would seek out the metaphysical roots of physics and all other sciences; and that their entire basic curriculum would become four integrated modes of philosophy. Such a next step, with a faculty prepared to risk teaching it, will come really close to being integrated education.

—Harvey W. Culp

SOURCE READINGS: INTEGRATIVE MATERIALS AND METHODS

Normality as Personal Integration

ERWIN W. Fellows presents a most stimulating discussion of "Normality, Adjustment, Integration: A Study of Formulations of the Goal of Therapy" in the Summer, 1955 issue of the *Journal of Human Relations* (p. 17-31).

In a brief review of the literature on "normality," the author shows some of the different meanings the word has. He quotes Morgan as distinguishing three: an authoritative standard or goal, an absence of serious unusual conditions or pathologies, and a statistical average. Morgan regarded the third use as the proper one for psychology, "since he felt it to be more free from emotional attitudes or value judgments." Fellows goes on to say, "It might be suggested that this rather widespread preference for viewing normality in terms of conformity to average reflected a desire on the part of psychologists . . . to keep their science 'value-free'—a desire which, in this case, may have resulted only in their implicit acceptance and furthering of the values commonly held in the psychologist's culture."

The author discusses Benedict's relativistic view of normality and Wegrocki's criticisms. He maintained that deviation from an average was not necessarily "abnormal." Wegrocki defined abnormality as "the tendency to choose a type of reaction which represents an escape from a conflict-producing situation instead of a facing of the problem. No mechanism or type of behavior, as such, is abnormal. Abnormality is determined by function in the personality." The author refers to Green's examples to show that "persons who conform to either statistical norm or cultural ideal may be subject to more conflict and exhibit more behavior commonly regarded as neurotic than those who deviate from such norms."

Dr. Fellows reminds us that recent discussion of normality, mental health, and related concepts seems to center around "adjustment" and "integration."

"The concept of adjustment usually implies a kind of relationship between personality and some environmental condition. The exact nature of the relationship is not always clearly defined, but may involve such phrases as acceptance of reality, lack of conflict with other persons, behavior which meets the expectations of others."

"Perhaps the most frequent criticism of adjustment therapy is that it tends to regard personality as something 'undynamic' or mechanical, and to ignore values of the individual patient. It may be difficult to determine just what set of environmental conditions are the important ones to adjust to, especially in a changing society or in a situation where the individual must

react to a number of different and perhaps conflicting social environments. McBee is one who suggested that 'some so-called realities are of a type that no human should adjust to'."

The author explains that a number of people find the essence of mental health to lie in something internal to the individual—an integration, consistency, harmony. He discusses Winthrop's proposal that logical consistency of attitudes may be a measure of personality integration. "Winthrop recognizes that such logical consistency may not be prized by the society. The further question should be raised of whether a logically consistent set of attitudes, especially if held to rigidly, might not make an adaptation to social change, and even survival itself, difficult, as in the case of a person living in the twentieth century with an integrated set of thirteenth-century attitudes. It is also possible that an attitude system might be based on factually unwarranted assumption and so be, in a sense, erroneous itself."

Dr. Fellows goes on to list a number of specific behavioral characteristics which are regarded as symptomatic of a desirable (normal, mature) personality. Some of these are: facing reality, awareness, sense of identity or selfness feelings in proportion to significance of things, rationality, honesty, skepticism, etc. Then the author asks the questions "What are the reasons for preferring these ways of behaving and not others? What is the basis for such value judgments as these represent?"

The author believes that the concepts of mental health discussed earlier would be more adequate for their purpose if they were seen not as ends in themselves, but as means to the end of individual happiness or pleasure. "From the standpoint of the individual organism, pleasure may be regarded as an ultimate goal to which other goals are subsidiary, although only the subsidiary goals may be consciously formulated."

Dr. Fellows suggests that "mental health (happiness) will be easiest to attain (a) when those forms of behavior most productive of happiness in themselves are also socially approved, and (b) when a wide range of social tolerance exists, permitting individuals to develop a variety of behavior patterns and to experiment."

"The concept of happiness, and hedonistic theory generally, have been associated historically with certain characteristically eighteenth-century points of view, particularly utilitarianism, which retreated in the nineteenth century under the influence of evolutionary theory, finance capitalism, discovery of the great range of cultural variability, and the discovery of the seemingly irrational character of human drives. Its place, in the study of human behavior was largely taken by 'adjustment' . . . Any new use of the con-

cept must take cognizance of the scientific knowledge of human behavior developed in the past century. It must also avoid the dangers of unverified metaphysics and the limitations of cultural conditioning. Hedonistic theories have often overlooked the social component of happiness, which must be included in any workable formulation dealing with human behavior."

—Ruth Lofgren

Homeostasis as a Principle in Ethics

"DOES Biology Afford a Sufficient Basis for Ethics?" is the question discussed by Dr. Patrick Romanell in the September, 1955 issue of *The Scientific Monthly*, p. 138-146. This paper is in part an examination of an article by Dr. Alfred E. Emerson on "Dynamic Homeostasis: a unifying principle in organic, social and ethical evolution" which was abstracted for MAIN CURRENTS readers in the May, 1954 issue (Vol. 10, No. 5).

Dr. Romanell is interested in the "unusual concern that is shown by natural scientists as a group over the dangers of their work, actual and possible. This concern for the moral risks involved in scientific development is evident, among other things, from the new crop of essays . . . urging the adoption of a scientific approach to ethical problems." However, their authors have approached "problems of value with the same habits of mind and with the same methods of procedure that have proved so successful in dealing with problems of fact."

Dr. Romanell finds himself "in complete sympathy with Emerson's plea for a position in ethical theory that he refers to as 'Naturalistic Ethics' . . . However, what is actually defended in his article is, technically speaking, a traditional version of what may be more properly identified as 'Positivistic Ethics.' By positivistic ethics is meant . . . all statements of moral value must be reduced to statements of empirical fact before they can lay any legitimate claim to scientific validity."

The author recognizes Emerson's wisdom in clinging to the classical faith in the possibility of making a science out of our moral judgments. "Nevertheless, he spoils this faith by his persistent tendency to reduce the meaning of terms in the moral context to their biological analogs; his entire thesis rests explicitly on the reduction of all the fundamental categories of ethics to Walter B. Cannon's physiological concept of 'homeostasis.'" Dr. Romanell warns that to reduce ethical terms to their homeostatic equivalents is to "water down their strictly normative connotation, the net result of which is to run counter to that famous insight of John Stuart Mill: 'It is better to be a human being dissatisfied than a pig satisfied.' Thus, organic satisfaction, which is homeostasis proper, is not identical with moral satisfaction. A man,

like Socrates drinking the hemlock, may undergo organic dissatisfaction and still enjoy moral satisfaction, appearances to the contrary notwithstanding. Such a situation would be impossible to explain on the Emersonian line of reasoning." We are reminded that it is their genesis that biological and social phenomena have in common, not their specific characteristics. "If this argument holds against the reduction of social phenomena to biological phenomena, it holds even more so against the reduction of moral phenomena to biological phenomena."

Dr. Romanell disagrees with Emerson's view that our philosophical difficulties are more semantic than scientifically real. "But what, we query, is more 'scientifically real' than the evident gap in our daily experiences between the actual and the ideal? . . . Philosophers . . . first find the gap in our moral experience and then express what they find in the best language they can.

"Now, it is this gap in our daily experience that makes the problem of the relationship of 'is' to 'ought' so exceedingly crucial in philosophy."

The author points out that Emerson made the mistake of not distinguishing between problems of fact and problems of value. It is the fact that the social field is confronted with the problems of value as well as the problems of fact that differentiates it from other fields of inquiry. "Because problems of value are often so difficult to disengage from problems of fact, there is a natural tendency in the hybrid field of the social studies to fuse social problems of value with social problems of fact and, thus, confuse them. . . What characterizes ethics as a *normative* science is that its ultimate concern is with the validity of judgments with regard to what men ought to do, not with the validity of judgments with regard to what men actually do. And since these two classes of judgments are not necessarily equivalent in meaning, men being what they are, it follows that ethics cannot be reduced to a *descriptive* science without losing its uniqueness as a type of inquiry. Hence, no descriptive science as such, biological or otherwise, can serve as a *sufficient* basis for ethics proper." Dr. Romanell reminds us that the difference in complexity between observation in the physical or biological sciences and the social sciences is one of *degree*, while the difference in complexity between observation in any one of these sciences and their counterpart in ethics is one of *kind*.

"Consequently, a principle derived exclusively from biological data, such as homeostasis, can provide only one-half of ethical wisdom, the *instrumental* half. The other half . . . must come from a principle that performs a *normative* function in the sphere of conduct—that is, one that specifies the ultimate standard for evaluating the means chosen and the ends desired."

As the author says, all sciences, on reaching maturity, formulate their general principles in what are called "limiting concepts." He points out that it is a mistake to confuse an analogy in method of reasoning with analogy in subject matter. Difficulties arise when one mistakes the analogy between ethics and biology

in their *limiting* concepts for an analogy in their *material* ones.

Finally, Dr. Romanell deals with the question of the formulation of hypothesis. "In the social sciences, to take the area of study closest to ethics, we formulate hypothesis in order to understand what the social facts *are*, but in ethics proper we formulate hypotheses in order to understand what those facts *should be* in terms of human possibilities. . . what is needed in the way of theory in the field of ethics is not a *biological* but an *ethical* principle of 'dynamic homeostasis.'

"An ethical hypothesis does not yield *predictions* of fact that refer back to the world that *is*; rather, it yields *prescriptions* of value that look ahead to a world that *is-not-yet* and, strictly speaking, never will be completely achieved, since no ideal of life can ever be fully realized."

The author recognizes that any proposal that calls for the application of the scientific method to ethics . . . should proceed to designate the *specific form* of that "logical method" that is appropriate to ethical inquiry. "This is no easy task, of course. Whatever may be my opinion of its ultimate success or failure, Emerson deserves much credit for his utter sincerity in attempting a scientific approach to ethics."

—Ruth Lofgren

Criteria for the Educated Man

WRITING in *The Advancement of Science* for September 1955, J. F. Wolfenden considers "The Educated Man in 1955," and in so doing confronts the most basic question which educators continually ask, or should ask, themselves: What is education for?

"Even a comparatively superficial examination will reveal what seems to me to be one of the fundamental dilemmas of all education. . . On the one hand, all education is rooted and grounded in the past. . . Indeed, I have more than once read that it is the function of education to be conservative, to fortify and preserve the culture of a tribe, a people or a class. . . On the other hand, it is part of our duty to look forward into the future. For, at the lowest, it is in the future that the young people whom we are educating will spend their lives, while at the highest it might well be held to be our responsibility to ensure that they, in that future, will make their world a better place than the one we or their grandparents have known."

Each age and culture has emphasized certain characteristics which represented the current educational ideal of a generation. That being so, the author asks whether there is anything today which might be regarded as the contemporary ideal of the educated man.

First, there is the concept that the prime mark of the educated man is his understanding of human nature. Although this is not necessarily a "conservative" view, "it is natural that those who hold this

view should be more interested in history, literature, philosophy, economics, the spheres in which human motive, emotion, thought and action show themselves, than in the more abstract and impersonal branches of study. . ." The pattern of education which would correspond to this outlook would naturally be "bookish," but it should also lead to a practical immersion in human affairs. Throughout the centuries, this has been considered the ideal, classical education for the statesman.

From the point of view of 1955, however, a purely humanist education may be found wanting because of what it leaves out of consideration: the realm of the non-human, or natural science. "In our present-day civilization more is required than just the human without the scientific or just the scientific without the human. If we are going to be able to behave as educated persons in the present age we need both."

All this is applicable to the small minority who can become broadly competent to the present situation, both humanistic and scientific. Must the great majority be excluded from all possibility of being called educated men? The author feels that merely to ask this question, which implies educating everybody, shows how far we have come in our thinking. However, from his point of view, to be called educated a person must be able to move in two spheres: He must be able to appreciate the achievements of the human race in government, art, literature and social living, and at the same time, he must have facility in the realm of abstract thought. Mr. Wolfenden is not hopeful of the extension of these abilities to all.

As for the future, "The tremendous movement to educate everybody, up to the limits of their abilities and aptitudes, is in its very earliest days. . . Our next task, obviously, is to find the right forms of such education, the kinds appropriate to each one of the children who are to have it. . .

"Tentatively and with diffidence I would suggest that one of our dogmatic criteria may well be satisfied. I can see that there is a real possibility of bringing into the education of everybody that acquaintance with human affairs which seems to me to be an indispensable qualification. . . There could be well be a growing un-aristocratic culture, based quite explicitly on the great majority of a population, working out in its own appropriate way something analogous to the aristocratic humanist interests of the past and present. . . I find it harder to believe that the second dogmatic criterion, of ready familiarity with abstract concepts, could ever be satisfied by the majority of any population. But here there is an alternative. It could happen, with the incredible advances which technology is making, that the emphasis in human thinking may move away from conceptual thought to something else."

But what that something else might be Mr. Wolfenden does not hazard a guess, leaving it as a possible attribute of the educated man of 2055.

—E. B. Sellon

NEWS AND NOTES

IN the *New York Times* for July 5, 1955, there appeared a report by Benjamin Fine of the National Education Association's ninety-third annual convention, held in Chicago. The business of the convention which was especially noted by Dr. Fine was a program of political action now being charted by school officials in an effort to influence members of Congress on school issues. Dr. Earl J. McGrath, President of the University of Kansas City, who was U. S. Commissioner of Education from 1949 to 1953, called upon the nation's teachers to unite in one powerful organization which would enter the political arena in order to improve their status. Following Dr. McGrath's talk, the nine-man commission met to consider the bold suggestion, and unanimously agreed to follow the program as far as possible. Dr. Rex H. Turner of the Oakland, California, school system, chairman of the commission, said that they recognized that their actions might be misunderstood, and that some members of the teaching profession would be disturbed at the use of such terms as political action and political pressure, but that they felt some such action on a national basis was essential in order to have better schools.

Naturally everyone who finds the improvement of our school system a matter of concern must evaluate impartially and with care every suggested effort for such improvement. In this case, the proposed organization can turn out to be a very good thing or a very bad thing, depending entirely upon emphasis and direction. It can be a very good thing, provided that teachers use their newly created pressure group as a real social force, which maintains vigilance for the up-grading of education, for the improvement of teaching and all teaching materials, including school buildings. If they (to quote from Dr. McGrath's address) "... try to enhance the position of the teaching profession and to maintain the entire educational system at a high level of efficiency and effectiveness," they will be a powerful constructive force.

If, however (to quote Dr. McGrath further), this pressure group stresses the "enhancement of the position of the teaching profession," and has as a prime reward for "slugging it out on the political front" the object that "they [teachers] too would get higher salaries," there is danger that the group, following in the footsteps of labor, agriculture and business, can become a power-complex group resistant to change and persisting in enhancement and entrenchment.

No one can argue the point that the teaching profession needs to become more politically mature. Neither can anyone argue that the teaching profession, by and large, needs a better status in the American community, or that its voice should be heard and respected by legislative bodies, federal as well as

state. But the great danger to a group acting in this way (as the history of other such groups demonstrates) is that while it may be termed a "pressure group" when considered in relation to its behavior towards its social environment, it may easily tend to become a "vested interest group" when regarded from within.

The teaching profession must realize that legislation, with or without the assistance of its "pressure," can actually do little in the real sense to improve education, either as regards its efficiency or its effectiveness. Such results can only be obtained by the teaching profession itself, acting from within, in its own right.

Both Dr. McGrath and Dr. Turner, while justified in viewing and appraising the political immaturity of teachers, used some unfortunate words in describing it, such as "squeamish," and in making their case for "slugging it out." Courage is certainly a requisite in the teaching profession. But does the highest use of this courage consist in slugging it out in the political arena and forcing legislators (presumably against their will and conviction) to pay teachers a living wage? One might inquire whether the requisite for a teacher is not rather that moral courage which is required to face the truth, to stand for it, and to teach it. Perhaps, if properly educated by our teachers, the society of which we are all a part could evolve into one which would gladly and freely pay high returns to that sort of courageous profession, just as it may well be in danger of increasing in disrespect for teachers and intellectuals who have no recourse but to "slug it out" for pay.

Pertinent to this whole issue is a report published for the Fund for the Advancement of Education, established by the Ford Foundation, in which Beardsley Ruml and Sidney G. Tickton discuss *Teaching Salaries Then and Now*. The authors have assembled statistics to show the absolute and relative deterioration of educators' salaries over the last fifty years, as a result of which able young people turn elsewhere for their careers and a general sense of unfair treatment pervades the profession. Mr. Ruml made one important point in his analysis of the present situation. He said that an improvement would come "not with more money only, but with increased efficiency, new ideas on teaching methods, drastic reorganization of the curriculum, and finally a belief in education as a value for its own sake . . ." This places the emphasis where it should be: upon the restoration of value to education through the teaching process itself, which can convey to Americans knowledge of the order in the universe and meaning in human life. This is the immense task that awaits teachers, and its successful completion would demonstrate more con-

vincingly than anything else how intimately their professional life is connected with their constitutional rights, with the defense of freedom and of the integrity of the individual, and the documentation of the ethical values which underlie democracy.

WE have received the first issue of *Historical Abstracts*, published in March 1955, which, together with its companion *Bulletin*, will appear quarterly. The journal is under the general editorship of Eric H. Boehm, with John Erickson, St. John's College, Cambridge, Fritz Fellner, University of Vienna and James R. Strahan, Western College for Women, as Associates. There is also an Advisory Board with representatives from India, Mexico, France, Italy, Austria, Germany, England and Japan as well as the United States.

The purposes of *Historical Abstracts* are stated as follows: "The objective of *Historical Abstracts* is to furnish a bibliographic service to the historical professions, to librarians, to research agencies and institutes, and to persons working in related disciplines, especially international relations and political science. It is hoped that *Historical Abstracts* will contribute toward penetrating the obstacles to research offered by geographic and language barriers."

The journal includes articles on political, diplomatic, economic, social, cultural and intellectual history appearing on the period 1775-1945 in the periodical literature the world over. For the present it will not include historical articles of limited local interest or those normally understood to belong to another field unless these are of special significance or relevance to the understanding of the developments of a particular period.

Inquiries should be addressed to the Editorial Office, c/o Historisches Seminar, Universitat Wien, Vienna 1, Austria.

A new quarterly, interdisciplinary journal of behavior theory, entitled *Behavioral Science*, will begin publication in January, 1956. The official publication of the Mental Health Research Institute at the University of Michigan, it will contain articles on general theories of behavior and on empirical research specifically oriented toward such theories. Although the scope of the journal will include all aspects of behavior which can be substituted under broadly general interdisciplinary theory, in the field of application special emphasis will be placed on contributions relating to research in mental health and disease.

The editorial board will include Franz Alexander (psychoanalysis), Alex Bavelas (social psychology), David Easton (political science), Ralph W. Gerard

(neurophysiology), Donald G. Marquis (psychology), James G. Miller (psychology and psychiatry), Jacob Marschak (economics), Anatol Rapoport (mathematical biology), Ralph W. Tyler (education), and Raymond W. Waggoner (psychiatry).

THE Society for the Advancement of General Systems Theory (whose organization and general purposes were reported in MAIN CURRENTS, Vol. 11, p. 96), announces that its first meeting since organization will be held in Atlanta, Georgia, as part of the proceedings of the American Association for the Advancement of Science.

The programs will be held on Tuesday and Wednesday afternoons, December 27 and 28, 1955, at 2:00 p.m., as follows:

Tuesday: Symposium, *Entropy*, W. Ross Ashby, Center for Advanced Study in the Behavioral Sciences, Stanford, Calif., Presiding. 1. The Concept of Entropy in Irreversible Thermodynamics and in Biology, Ludwig von Bertalanffy, Mt. Sinai Hospital, Los Angeles; 2. The Concept of Entropy in Information Theory, Anatol Rapoport, Mental Health Research Institute, University of Michigan. Discussant, Walter Rosenblith, Massachusetts Institute of Technology.

Wednesday: *Contributed Papers and Organizational Meeting*, Anatol Rapoport, University of Michigan, Presiding. 1. Purpose of the Society and Organizational Business, Ludwig von Bertalanffy; 2. General System Theory as a New Discipline, W. Ross Ashby; 3. The Principle of Allometry in Biology and the Social Sciences, Raoul S. Naroll, Human Relations Area File, Washington, D. C.

ON the cover of this issue is the brave array of flags on the plaza of the United Nations, in New York City, which fly above the steady stream of pilgrims to this shrine of mankind's hopes. Here, in the U.N., thin threads of "international relations" (of which Dr. McClelland writes in this issue), reflecting the longing of mankind, slowly become the filmy living fabric which is the world community to come.

Patience is necessary. The United Nations do not even, as yet, include all free societies. That a people as cultivated as those of Ceylon, for example, should be observers and not members shows how far "international relations" are from being organic process, an all-inclusive open system of free men. This will come.

Meantime the United Nations fulfills the directive found in the last shloka of the Rig Veda, the ancient Aryan prescription for peace: "O ye peoples of the earth! Walk together, speak together, think together, and then—and then only—peace will ensue!"

—F. L. K.

REVIEWS

Biological Basis for the Soul

DEAN Edmund W. Sinnott of Yale University has written *The Biology of the Spirit* (Viking, 1955, 173 pages and index, \$3.50), resting the argument upon the foundation of his widely-read *Cell and Psyche*. The present volume is written with a simplicity and directness that could well be a model for all of us. This forthrightness is just as evident about issues on the biopsychological frontiers, many of them debatable to those who have not inquired into them, as it is in the more familiar mysteries of development and inheritance.

Dean Sinnott provides a few telling examples of the latter in the opening chapters. "Man's Double Nature" begins the volume. Chapters II, "Biological Goals," and III, "Protoplasm and Purpose," provide the general reader with a few of the facts he needs if he is to give intelligent thought to the theme. The latter is stated on pages 60-62:

"Life is inherently synthetic, and synthesis is an organizing process. It puts substances together to make the almost infinite number of organic compounds found in the bodies of animals and plants. During the course of evolution this synthetic process has steadily produced new compounds, substances never known before on earth. More than this, new species—new organized systems—have also been developed. The fascination for us of the great evolutionary drama is to watch the continuous procession of them which comes upon the scene. These developments may be related, as many believe, to the almost limitless possibilities for new atomic combinations among compounds of carbons; but whatever the cause, we must admit that life in its material products is persistently creative. Such creativeness is not evident in the inorganic world . . . Constancy and conservatism are qualities of the lifeless, not the living.

"In a similar fashion, physical activity is creative. Even homeostasis, so evident in physiological processes, is not to be thought of as merely the maintenance of a static condition, for its norms change as development progresses. It is in behavior, however, that the constant change in goals and the origin of new ones are most conspicuous. As Lillie puts it, 'Psychical existence is in present time and carries with it a quality of novelty; the past is left behind, and there is an advance into the future . . . The psychical is the source of initiative when action takes on a novel, unforeseen, or creative form, as in purposive activity or (in a broader sense) in natural creative action in general.'"

The author broadens the inquiry to take in consciousness in man, and moves on to the current philosophy of biology: "The experience of physics in the past half-century should warn us that science has by no means yet exhausted its exploration of avenues to an understanding of the universe. What, for example, may come of further investigation of bio-electrical fields in living things, or of the field theory in general as applied to biology? Such a concept, with its idea of a constant spatial pattern of force that governs the distribution of particles, suggests the pattern of an organism.

" . . . Radically new ways of looking at nature may have to be opened, ways that are so different from the familiar ones science long has trod that many will refuse to recognize them. What are we to say, for example, to the abundant evidence that telepathy is a fact and that other fields of what is called parapsychology deal with real phenomena and not imaginary ones? . . . Radically different views as to the nature of space and time may have to be developed to deal with phenomena like these, and the theory of relativity has made a beginning at this difficult task. Scientists brought up in the older modes of thinking will hardly blaze fresh trails here, and the establishment of new ideas may have to await the passing of their opponents from the scene."

Sinnott goes on to consider aesthetics and the creative spirit: "What is beauty, that we so should value it? What selective advantage, in a competition for survival, can there be in any love for it? In man's long upward struggle the pursuit of beauty has sometimes actually been a handicap, for uncouth barbarians too often were victorious over men of higher cultivation and aesthetic sensibilities. Our love for beauty is hard to attribute to the tough give-and-take of evolutionary selection. It is a peculiarly human quality. Beasts possess only the rudiments . . . Beauty appeals to something deep within us. Our love of it feels like something native to our hearts, indigenous there, and not acquired just for its usefulness. 'Beauty is its own excuse for being.'"

The Biology of the Spirit will be sold and read by many thousands. One hopes that it may move men in positions of power, and prompt them to pursue its thesis, to set up serious and sustained inquiry, to document for our educators the common ground of science and faith here cleared for use.

—F. L. Kunz

An Analysis of Creativity

WHAT Is Creative Thinking? is the title of a new book by Dr. Catharine Patrick (Philosophical Library, N. Y., 1955, 210pp., Bibliography, Index, \$3.00). The author has sought in this volume to present "the available information about creative thinking, which now is scattered among a number of articles and chapters of various books." If the book falls short of this perhaps too ambitious aim, it nevertheless gives us a valuable over-view of the subject and provides some answers to the question in its title.

Dr. Patrick explains that creative thought is characterized by four stages: preparation, incubation, illumination, and revision or verification. The first quarter of the book is spent in describing and documenting these stages.

"Preparation may involve both deliberate and non-deliberate mental activity. Sometimes ideas seem to be pressing in upon the mind without much effort on the part of the subject, as in the case of the poet or artist. . . . On the other hand, the scientist or inventor may spend hours in strenuous mental effort to collect more information about his problem. This stage is typically accompanied by an unpleasant feeling state. It is often

characterized by an attitude of doubt or perplexity. A sense of frustration is common, especially after long periods of preparation without reaching the solution. . .

"The period of incubation is characterized by the recurrence of the chief idea, which is finally adopted as the solution to a problem or the subject of a work of art in the stage of illumination. This idea reappears spontaneously from time to time with modifications, as it recurs in different mental sets or configurations. Frequently the thinker has ceased making an effort to solve the problem and has turned his attention to other matters, as relaxation, recreation, physical exercise or other types of mental work. At the end of this stage, the idea which has been incubating is more clearly defined than it was at the beginning." The author reminds us that the stages of preparation and incubation may overlap, and the spontaneous recurrence of the idea may be apparent while the subject is still actively gathering information about the problem.

"Illumination is the third stage of creative thought, during which the idea which has been incubating assumes definite form . . . The idea appears suddenly. It comes spontaneously, with a feeling of certainty. It is typically accompanied by an emotional reaction of pleasure, even joy or elation. This stage is generally of short duration. While insight may occur in all kinds of problems, even the most simple, illumination is applied to the insight which appears in the complicated problems of creative thinking, where it has been preceded by the stages of preparation and incubation. . .

"The final stage of creative thought is verification or revision . . . The idea obtained in illumination is made to conform to the standards of art or science by special disciplines or techniques. The revision may be slight or involve much effort. The duration of this stage may vary from a few minutes to months or years, depending on the nature and difficulty of the problem." Revision may begin during the stage of illumination.

The remainder of the book presents an analysis of creative thinking and productivity. The section on "Explanations of Incubation and Creative Thought" discusses the contributions that psychology has to make to an understanding of the subject. The author also deals with the roles of emotion and imagination in creative thought. The next chapter examines the "Relation of the Logical Steps of Reasoning to the Psychological Stages." The author concludes that the five logical steps: problem, data, suggested solution, evaluation, objective test or verification, may all occur in the first stage of preparation in simple problems, and the thinking is terminated at this point. However, in more difficult problems the five logical steps may coincide with the whole process of creative thought, including the four stages of preparation, incubation, illumination, and verification or revision.

Dr. Patrick finds that the peak of individual achievement of the highest quality is within the narrow age range of thirty and forty years for people in the arts, sciences, etc. and suggests that this is evidence that creative thought is of the same essential nature in the various fields. It was pointed out that the work of a genius in his old age may still be far superior to the best work which the average man does in his prime, and that, therefore, the comparisons are made between the youth and age of the same genius.

"If the time is too short and definitely fixed, the per-

son is apt to recall a solution, which he made in a similar situation in the past, and let it go at that, without trying to solve the problem more accurately."

The author quotes Hartmann: "Psychologists looking over the educational scene at all levels, but particularly focusing their gaze upon the principal stretch of the school system between the kindergarten and the graduate school, have grown more and more convinced that the processes of 'acquisition, impression, intake, and learning' have tended to dominate over those concerned with 'production, expression, output, and creation.'"

Dr. Patrick concludes the book with a discussion of "A Program to Improve Creative Thinking in Ourselves and Others" which she says should include: "first, to stimulate and encourage people to tackle complicated and difficult problems; and second, to develop a sense of leisure and a certain amount of freedom from daily routine for solving such complicated problems. It is important for us to realize that we all are capable of creative thinking of more or less merit."

The many quotations from the diaries and journals of great musicians, poets, artists, scientists, and inventors make most stimulating reading; and anyone interested in the subject of creativity will appreciate the extensive bibliography.

—Ruth Lofgren

Education for Democracy

DR. Arthur Bestor, whose controversial *Educational Wastelands* created such a stir in 1953, needs no introduction to our readers. His latest book, *The Restoration of Learning* (Alfred A. Knopf, N. Y., 1955, 459 pp, index, \$6.00), continues his battle for educational reforms. This is not a revision of the earlier work, although a great deal of its material is incorporated in the present volume. The book is therefore very much in the nature of a polemic and, in this day when avoidance of controversy often appears to be a chronic disease, will be discounted unduly. Out of controversy can come re-evaluations of accepted standards. From the disturbance which the polemic can create may come fresh action even if that action be the mustering of the courage to stand up and be counted.

"This book," the author begins by saying, "is offered as a confession of faith both in education and in democracy. More than that, it embodies a profound belief in the complete and perfect compatibility of the two. If my remarks are to be construed as an attack, the attack is directed simply against the insidious argument that schools and colleges to be democratic must lower their intellectual standards and water down their curricula." With this beginning, Dr. Bestor supplements his earlier arguments with a program of reform which will, he believes, constitute a "restoration of learning."

We who have held forth many times on the meaningless of much in education are, of course sympathetic with the second section of the book which treats of "Aimlessness in Education." In attributing this, in part, to the fact that too often a school administrator (to be any good in such a complex job) cannot be a profound scholar, Dr. Bestor is stating a truism that is well-known to anyone who has had wide dealings in public educa-

tion. Other contributing factors, he asserts, are "... educational policy is no longer being worked out co-operatively by the entire learned world." We venture the comment here that, if this were not true, we might not be in the situation of finding ourselves running short of scientists and science teachers. But we must also observe that it is not exclusively the fault of pedagogues and teachers that "... Curriculum-making for the public schools has fallen into the hands of an extremely narrow group of self-styled experts—principally professors of pedagogy. ..." Again we can only comment that this situation may exist because a large group of self-styled specialists have not only abandoned education to the pedagogues (who must do their best to go it alone) but have also often divorced themselves from the "entire learned world." Is this not the basis for the need for truly integrating learning?

The author devotes 187 pages to a section entitled "Roads to Educational Reform." This begins with a plea for unity of purpose among educators, for "elementary and secondary schools, after all, are only a part of our educational system: What goes on in them, however, affects every aspect of the intellectual life of the nation ... The aims of elementary and secondary education can be properly and safely defined only if all aspects of the life of the nation are taken into account ... there must be some measure of common agreement among those concerned with education ... unless they make substantially the same assumptions there cannot be an educational system at all, but only a hodgepodge of schools, working at cross-purposes to one another, and producing intellectual confusion instead of intellectual order. ..."

Whatever may be the merits of the individual reforms suggested and however much the criticisms may be validly qualified, this is a stimulating book, which ends on the sentence: "... To the study of American civilization we can bring the minds of antiquarians and annalists, or we can bring the disciplined imagination of men who can see in a blade of grass chemistry and biology and poetry, and in the smallest human event sociology and ethics and history. If we do the latter, no one will think to ask whether the study of American civilization can constitute an liberal education. The question will be, what the Renaissance humanist would have asked concerning the classics, can any other study be so liberating as this?"

—Harvey W. Culp

Popper-Lynkeus

SECURITY For All and Free Enterprise, by Henry I. Wachtel, subtitled *A Survey of the Social Philosophy of Josef Popper-Lynkeus*, has recently been published by the Philosophical Library (New York, 1955, \$3.00).

This relatively short book is about equally divided between the biography of the Bohemian, Popper-Lynkeus, and his social and economic philosophy. By vocation a mechanical engineer, he earned his living largely in selling and installing his inventions. In spite of his success as an inventor he never cared for this work but wished always that he had more time to devote to pure science, philosophy, social sciences, psychology, and writing poetry. He made written contributions in each of these fields, and was truly a scholar who never became a specialist.

From his twenties onward he wrote poetry and it was in this writing that he took the pen name of *Lynkeus* which has now been added to his family name of Popper. He claims to have received many of his poetic narratives from his dreams and gave some information about his interpretation of dreams which Freud admittedly found useful in the development of psychoanalysis. Popper makes the strange claim of never in his life having had a senseless dream.

In his social philosophy he thought it most important that all people should have their material needs satisfied first. Without this they are not free to follow their intellectual and other inclinations. This "guaranteed subsistence for all" was to be provided by requiring all able-bodied young people to work in a Labor Corps for something like eight years.

Although he favored the labor requirement for young people he thought no one should be subjected to non-voluntary military service in warfare even in national defense. To him forced fighting was akin to murder. He did, however, sanction a period of required military training in order that all who wished to volunteer for war service might be prepared to be useful. His suggestions for prison reform included the publicity of court trials as a means of handling criminals through their sensitivity to public opinion.

Popper-Lynkeus called his social and economic system a *socialistic-individualistic* one since some aspects of free enterprise remained within a socialist framework. He took his stand against Marxism as being primarily interested in equality while he was primarily interested in liberty.

This is an unusual book about an unusual person. It is no wonder that Albert Einstein was willing to write a brief introduction about the man with whom he once discussed the theory of gravitation. Wachtel has both written and edited the volume. It contains much of the English translation of actual writings of Popper-Lynkeus.

—Catharine Bergen

WE have received, in the same mail, *The Metaphysical Foundations of Modern Science* (Doubleday, New York, 325 pages, bibliography and index, 95¢), and *The Teachings of the Compassionate Buddha* (Mentor, New York, 241 pages, bibliography and glossary, 50¢), the one written, the other edited, by E. A. Burtt. The coincidence is eloquent of the scope of the modern philosopher's necessary interests, and of Professor Burtt's firm grasp upon the significant essentials.

The first volume appeared originally in 1924, revised in 1932. It pursues the historical sequence of scientific development only up to Newton, where the shift to deductive method re-established metaphysical foundations for science.

The second volume, which is quite new (1955), is a wise selection from earlier and later books in the Buddhist Southern and Northern canons. Speaking in New York recently, Mr. D. S. S. Gunawardene, Ambassador from Ceylon, pointed out that the ethical effect of Buddhism upon India, up to and including Mr. Gandhi, cannot be measured because it is diffused all through Indian life, but it has been profound, and continues.

Many agencies now work toward effective understanding with Asia. Buddhism is the key. Professor Burtt's compendium is timely.

—F. L. Kunz